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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,582	01/16/2004	John Thomas Mariner	US 131067-2 60QZ	7994
42248 7590 08/22/2007 MOMENTIVE PERFORMANCE MATERIALS INC.-Quartz c/o DILWORTH & BARRESE, LLP 333 Earle Ovington Blvd. Uniondale, NY 11553			EXAMINER DHINGRA, RAKESH KUMAR	
			ART UNIT 1763	PAPER NUMBER
			MAIL DATE 08/22/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/759,582

Applicant(s)

MARINER ET AL.

Examiner

Rakesh K. Dhingra

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,6-9 and 11-26 is/are pending in the application.
- 4a) Of the above claim(s) 18-26 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13,14 and 17 is/are allowed.
- 6) ☒ Claim(s) 1-4,6-9,11,12,15 and 16 is/are rejected.
- 7) ☒ Claim(s) 3,14,17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

Claim 14 is objected to because of the following informalities:

Line 20 of the claim recites “wherein two electrical conductors”, which may be amended to “wherein said two electrical conductors”, since the limitation “two electrical conductors” is recited already in line 19 of claim 14.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

Claim 14 recites the limitation “wherein said two electrical conductors are coated layers” in line 19. There is insufficient antecedent basis for this limitation in the claim. For the purpose of examination on merits this limitation has been interpreted as “wherein the graphite shaft has two electrical conductors having coated layers”.

Applicant is invited to clarify/confirm.

Response to Arguments

Applicant's arguments with respect to claims 1-9 and 10-17 have been considered but are moot in view of the new ground(s) of rejection as explained hereunder.

Applicant has amended claims 1, 11, 14 by adding new limitations, for example in claim 1 “the graphite shaft is a rod with a hollow core”, and in claim 11 – “each electrical conductor being in contact with and surrounded by dielectric material”.

New references [Moore (US Patent No. 5,710,407) and Shinriki et al (US Patent No. 6,143,081)] when combined with Honma read on amended claim 1 limitations. Accordingly claim 1 and dependent claims 2-4 and 7-9 have been rejected under 35 USC 103 (a) as explained below. Further, claims 6, 11,

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12, 15 and 16 have also been rejected under 35 USC 103 (a) as explained below. Claims 13, 14, 17 have been indicated as allowable subject matter, as explained below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

check & correct throughout
Claim 1-4, 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Honma et al (US Patent No. 5,478,436) in view of Moore (US Patent No. 5,710,407) and Shinriki et al (US Patent No. 6,143,081). *5748,436*

Regarding Claims 1, 4: Honma et al teach an apparatus (Figure 3) for use in plasma processing comprising:

a chuck (platform) 10 for supporting a wafer (object) 14, the platform comprises a substrate (body of disc shape) 21 having upper and lower relatively flat surfaces, the platform is comprised of graphite;

a first coating 23 of boron nitride formed on at least one of the flat surfaces;

electrodes 24a, 24b (second coating layer) composed of pyrolytic graphite disposed on the first coating and formed by masking and etching (in a patterned arrangement of predetermined geometry), the layer having at least two separate ends adapted for forming at least an electrode; and

a coating (third top coating) 26 of boron nitride (dielectric material) superimposed on said first and second coatings (column 3, line 45 to column 4, line 20).

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Honma et al do not teach a shaft extending substantially transverse to the platform, the shaft comprised of graphite and wherein the graphite shaft and graphite platform form a single unitary body and wherein the graphite shaft is a rod with hollow core.

Moore et al teach a wafer processing apparatus (Figures 5E, 5F) comprising:

a susceptor 402 (platform) for supporting a wafer 511 to be heated, the platform comprises a substrate having upper and lower relatively flat surfaces, the platform is comprised of graphite;

a shaft 516 extending substantially transverse to the platform, the shaft is comprised of graphite;

wherein the graphite shaft 516 and the graphite susceptor 402 (platform) are formed integrally (single unitary body) [for example, column 32, line 52 to column 33, line 50 and column 38, line 24 to column 39, line 10].

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to provide a graphite shaft that extends substantially transverse to the platform and is integrally formed with the susceptor, as taught by Moore et al in the apparatus of Honma to provide support to the platform and to enable use different susceptors for processing different wafer sizes.

Honma in view of Moore et al teach the shaft as a rod but do not explicitly teach the same has a hollow core.

However it is known in the art to use a hollow shaft for supporting a susceptor/electrostatic chuck to provide passage for electrical connection feeder lines to the susceptor/electrostatic chuck.

Shinriki et al teach a wafer processing apparatus (Figure 9) comprising:

An electrostatic chuck 224 (mounted in a support table 214) supported by a hollow shaft 216 and where electrical power line 226 is passed through hollow shaft 216 and connected to the electrostatic chuck {column 14, lines 4-55}.

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to provide a hollow shaft as a support to the platform as taught by Shinriki et al in the apparatus

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of Honma in view of Moore et al to provide passage for electrical feeder lines for supplying electrical power to the platform.

Regarding Claim 2: Honma et al teach that device 10 is an electrostatic chuck and the electrode 24a, 24b are chuck electrodes.

Regarding Claim 3: Honma et al teaches that electrodes 25 may be used as heating element. Further, Shinriki et al teach that apparatus of 9 can heat the wafer by the heating resistor 220 (Honma et al – column 4, lines 1-5 and Shinriki et al – column 14, lines 4-50).

Regarding Claim 4: Moore et al teach that susceptor 402 is disc shaped (Figure 5E).

Regarding Claim 7: Honma et al teach that patterned second coating 25a, 25b is formed on lower surface of body (platform) 21 (Figure 3).

Regarding Claims 8, 9: Honma et al teach that pyrolytic graphite coating 24a, 24b, 25a, 25b is encapsulated in a pyrolytic boron nitride coating 26 (Figure 3 and column 4, lines 5-20).

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Honma et al (US Patent No. 5,478,436) in view of Moore (US Patent No. 5,710,407) and Shinriki et al (US Patent No. 6,143,081) as applied to Claim 1 and further in view of Chu et al (US 6,793,767).

Regarding Claim 6: Honma et al in view of Moore et al and Shinriki et al teach electrodes formed from pyrolytic graphite as a continuous elongated strip but do not teach that the strip arranged in at least one of electrical flow path has at least one of a spiral pattern, a serpentine pattern, a helical pattern, a zigzag pattern, a continuous labyrinthine pattern, a spirally coiled pattern, a swirled pattern, a randomly convoluted pattern, and combinations thereof.

Chu et al teaches an apparatus (Figure 2) that includes electrostatic electrodes 104 arranged in a spiral pattern to evenly distribute the electrostatic chucking/de-chucking over the substrate (Column 3 Lines 10-20).

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Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to provide a strip with spiral form as taught by Chu et al in the apparatus of Honma in view of Moore et al and Shinriki et al to provide an electrode pattern capable of evenly distribute the electrostatic chucking/de-chucking over the substrate.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Honma et al (US Patent No. 5,478,436) in view of Moore (US Patent No. 5,710,407) and Shinriki et al (US Patent No. 6,143,081) as applied to Claim 1 and further in view of Divakar et al (US PG PUB No. 2002/0185487).

Regarding Claim 11: Honma et al in view of Moore et al and Shinriki et al teach all limitations of the claim including annular shaft having insulated electrical power supply (that is, electrical conductors in contact with and surrounded by insulation) {column 4, lines 15-35}.

Honma et al in view of Moore et al and Shinriki et al do not teach that the insulation of power supply lines is dielectric material. However use of dielectric as insulation for electric power supply conductors is known in the art, and as an example a reference is cited hereunder.

Divakar et al teach a wafer heating assembly 10 comprising a shaft 26 with electrical conductors 20, and where the shaft is coated with an aluminum nitride layer (dielectric) for providing electrical isolation and also for protection against corrosive processing environment {paragraphs 0033-0050}.

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to electrical conductors covered with dielectric insulation material as taught by Divakar et al in the apparatus of Honma et al in view of Moore et al and Shinriki et al to enable supply electrical power to susceptor coupled with electrical isolation and for improved durability of power supplying electrical conductors.

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Claim 12, 15, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Honma et al (US Patent No. 5,478,436) in view of Moore (US Patent No. 5,710,407), Shinriki et al (US Patent No. 6,143,081) and Divakar et al (US PG PUB No. 2002//0185487) as applied to Claim 11 and further in view of Komino et al (US Patent No. 5,478,429).

Regarding Claims 12,15: Honma et al in view of Moore et al, Shinriki et al and Divakar et al teach graphite shaft and electrical conductors but do not teach that the two electrical conductors are concentric with the first electrical conductor being disposed within the second electrical conductor.

Komino et al teach an apparatus (Figure 2) that includes a susceptor 32 with an electrostatic chuck 33 that includes an electrode 34 and a pipe structure (like a shaft) 51, 52 where two electrical conductors 62 and the outer pipe 52 are used for connecting the electrode 34 to an external power source 63. Komino et al also teach that the two electrical conductors are concentric with first conductor 62 being disposed within the second conductor (pipe 52) [Figure 2 and column 4, line 10 to column 5, line 15].

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to provide the shaft with two concentric electrical conductors as taught by Komino et al in the apparatus of Honma in view of Moore et al, Shinriki et al and Divakar et al to enable supply electrical power to the electrode reliably by preventing discharge from occurring inside the shaft.

Regarding Claim 16: Komino et al teach that the two electrical conductors 62, 52 have a common center (Figure 2).

Allowable Subject Matter

Claims 13, 17 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 14 - use form paragraph for independent claim ref. under 112

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~~Claim 14 allowed – since allowable subject matter has been indicated, applicant's reply must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 CFR 1.111(b) and MPEP § 707.07(a).~~

The following is a statement of reasons for the indication of allowable subject matter:

Claim 13: closest prior arts (Moore et al – US Patent 5,710,407, and Divakar et al – US PG PUB 2002/0185487) do not teach claim limitation “wherein two electrical conductors are symmetrically disposed on opposite sides of an exterior surface of the graphite shaft”, in the context of remaining limitations of the claim.

Claim 14: closest prior arts (Moore et al – US Patent 5,710,407, and Divakar et al – US PG PUB 2002/0185487) do not teach claim limitation “wherein said two electrical conductors are coated layers of pyrolytic graphite symmetrically disposed on opposite sides of said graphite shaft wherein two electric conductors each extend lengthwise along the graphite shaft and are integral therewith” in the context of remaining limitations of the claim.

Claim 14: closest prior arts (Moore et al – US Patent 5,710,407, and Divakar et al – US PG PUB 2002/0185487) do not teach claim limitation wherein said first electrical conductor is in a form of a graphite rod, the second electrical conductor is a hollow graphite rod, and wherein the first and second electrical conductors are separated by means of a coating layer” in the context of remaining limitations of the claim.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing

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date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rakesh K. Dhingra whose telephone number is (571)-272-5959. The examiner can normally be reached on 8:30 -6:00 (Monday - Friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571)-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Rakesh K. Dhingra

Karla Moore
Primary Examiner
Art Unit 1763